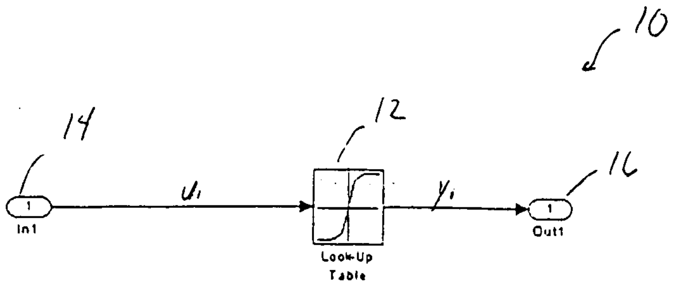


FIG. 1A (PRIOR ART)

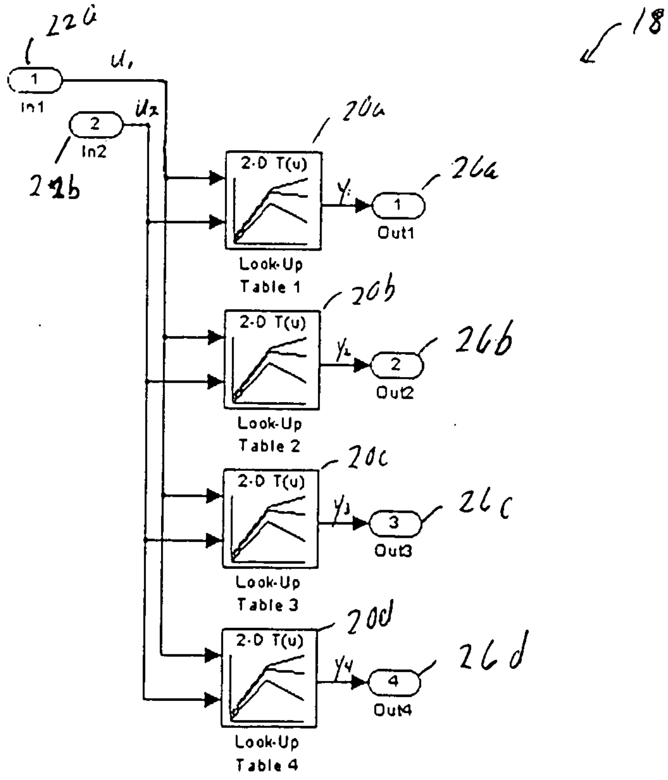


FIG. 1B (PRIOR ART)

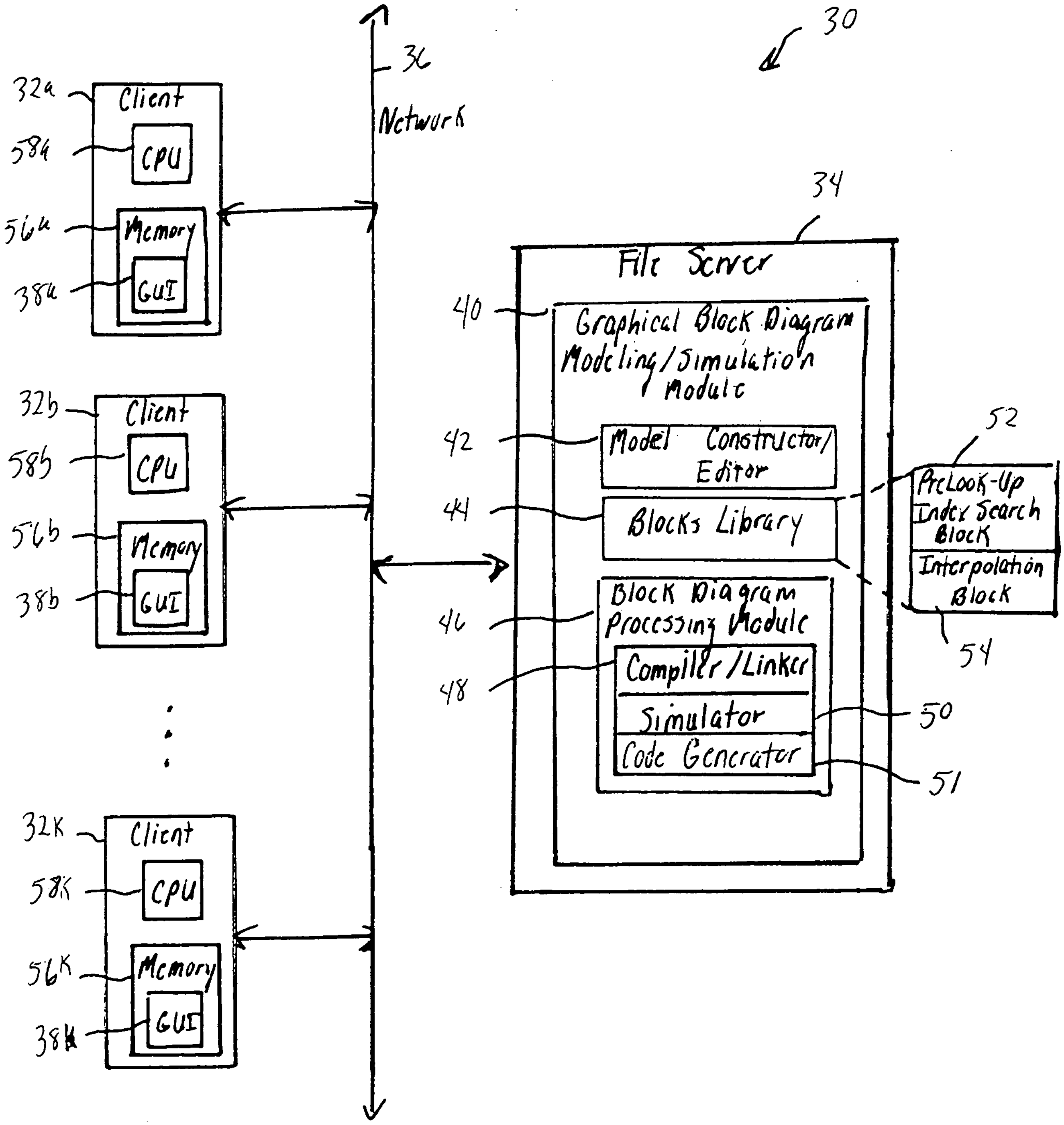

30
36
Network
32a
Client
58a
CPU
56a
Memory
38a
GUI
32b
Client
58b
CPU
56b
Memory
38b
GUI
32K
Client
58K
CPU
56K
Memory
38K
GUI
34
File Server
40
Graphical Block Diagram Modeling/Simulation Module
42
Model Constructor/Editor
44
Blocks Library
46
Block Diagram Processing Module
48
Compiler/Linker
Simulator
50
Code Generator
51
52
PreLook-Up Index Search Block
Interpolation Block
54

FIG. 2

SCANNED, # 12

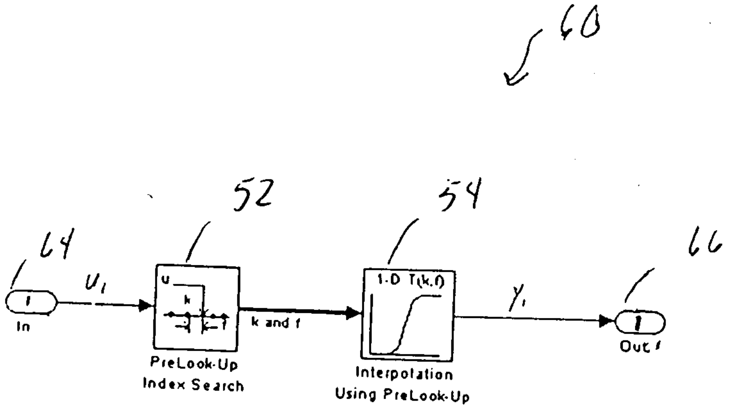


FIG. 3A

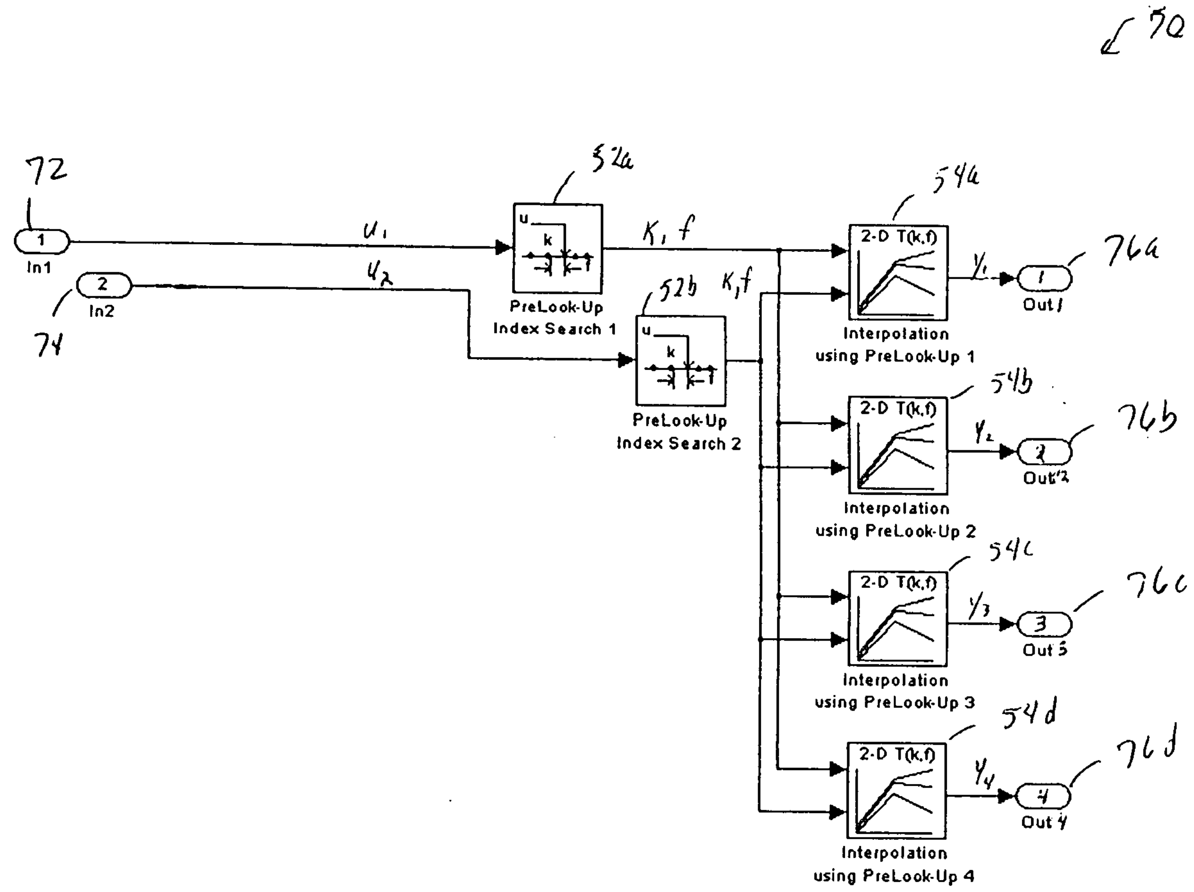

70
72
1
In1
2
In2
74
u_1
u_2
52a
u
k
PreLook-Up
Index Search 1
52b
u
k
PreLook-Up
Index Search 2
K, f
K, f
54a
2-D T(k,f)
Interpolation
using PreLook-Up 1
54b
2-D T(k,f)
Interpolation
using PreLook-Up 2
54c
2-D T(k,f)
Interpolation
using PreLook-Up 3
54d
2-D T(k,f)
Interpolation
using PreLook-Up 4
y_1
y_2
y_3
y_4
1
Out1
2
Out2
3
Out3
4
Out4
76a
76b
76c
76d

FIG. 3B

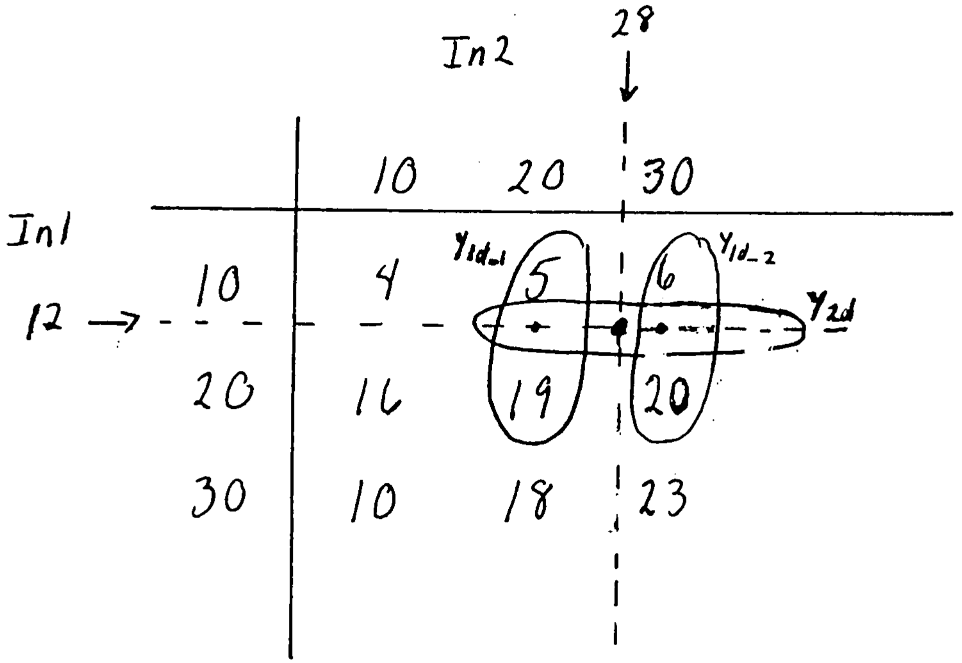


FIG. 4

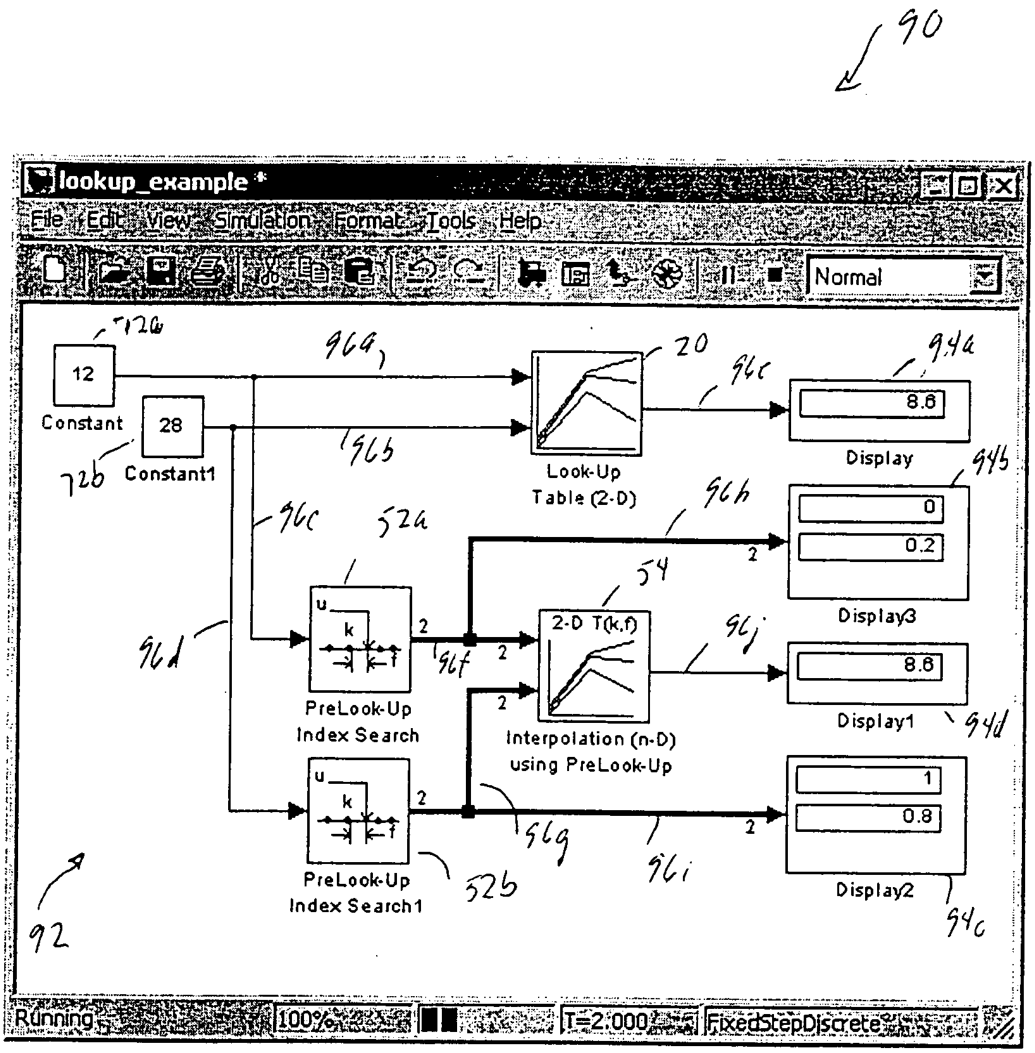
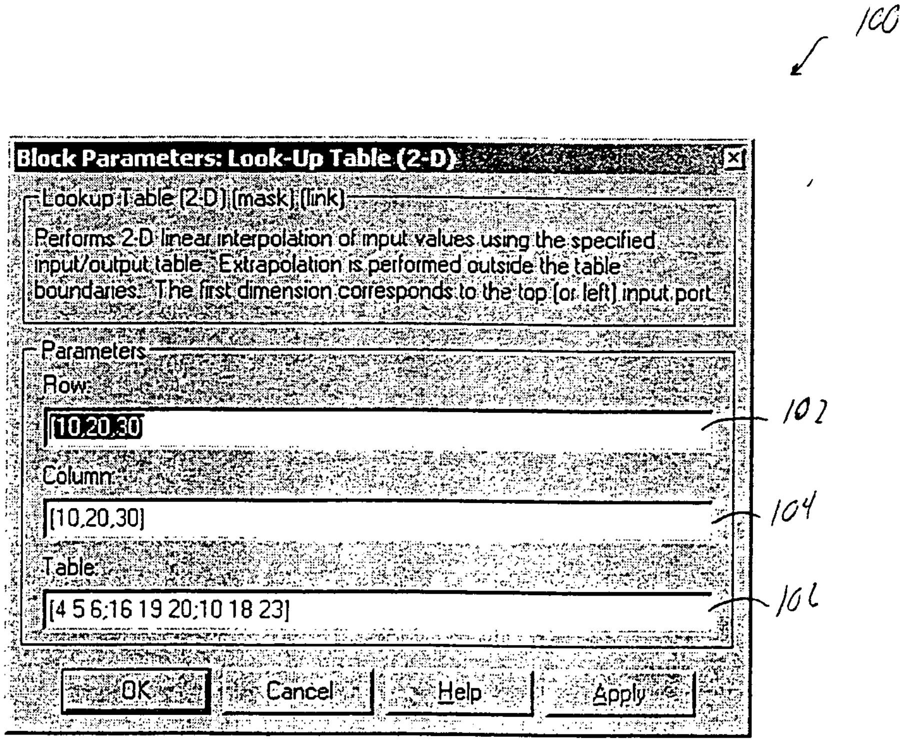

90
lookup_example *
File Edit View Simulation Format Tools Help
Normal
12
Constant
72a
28
Constant1
72b
96a
96b
20
Look-Up
Table (2-D)
96e
8.6
Display
94a
94b
0
0.2
2
Display3
96h
96c
52a
54
2-D T(k,f)
u
k
f
2
96f
2
2
96j
PreLook-Up
Index Search
Interpolation (n-D)
using PreLook-Up
8.6
Display1
94d
96d
u
k
f
2
96g
96i
2
1
0.8
Display2
94c
PreLook-Up
Index Search1
52b
92
Running
100%
T=2.000
FixedStepDiscrete

FIG. 5



Lookup Table (2-D) (mask) (link)

Performs 2-D linear interpolation of input values using the specified input/output table. Extrapolation is performed outside the table boundaries. The first dimension corresponds to the top (or left) input port.

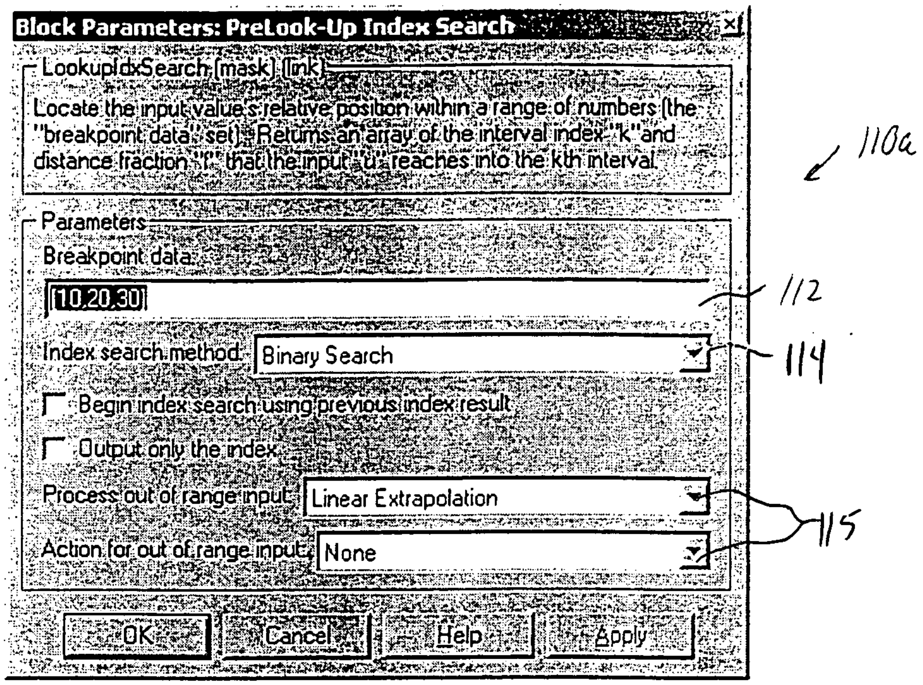
Parameters

Row:
[10,20,30]

Column:
[10,20,30]

Table:
[4 5 6;16 19 20;10 18 23]

FIG. 6



Block Parameters: PreLook-Up Index Search

LookupIdxSearch (mask) (link)

Locate the input value's relative position within a range of numbers (the "breakpoint data" set). Returns an array of the interval index "k" and distance fraction "f" that the input "u" reaches into the kth interval.

Parameters

Breakpoint data: [10,20,30]

Index search method: Binary Search

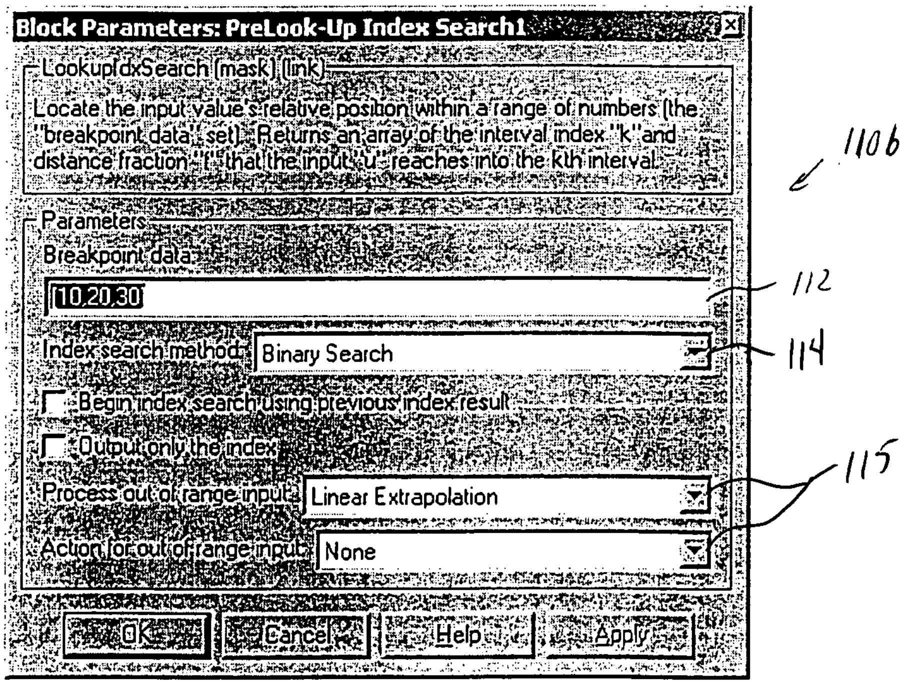
☐ Begin index search using previous index result

☐ Output only the index

Process out of range input: Linear Extrapolation

Action for out of range input: None

FIG. 7A



Block Parameters: PreLook-Up Index Search1

LookupIdxSearch (mask) (link)

Locate the input value's relative position within a range of numbers (the "breakpoint data" set). Returns an array of the interval index "k" and distance fraction "f" that the input "u" reaches into the kth interval.

Parameters

Breakpoint data: [10,20,30]

Index search method: Binary Search

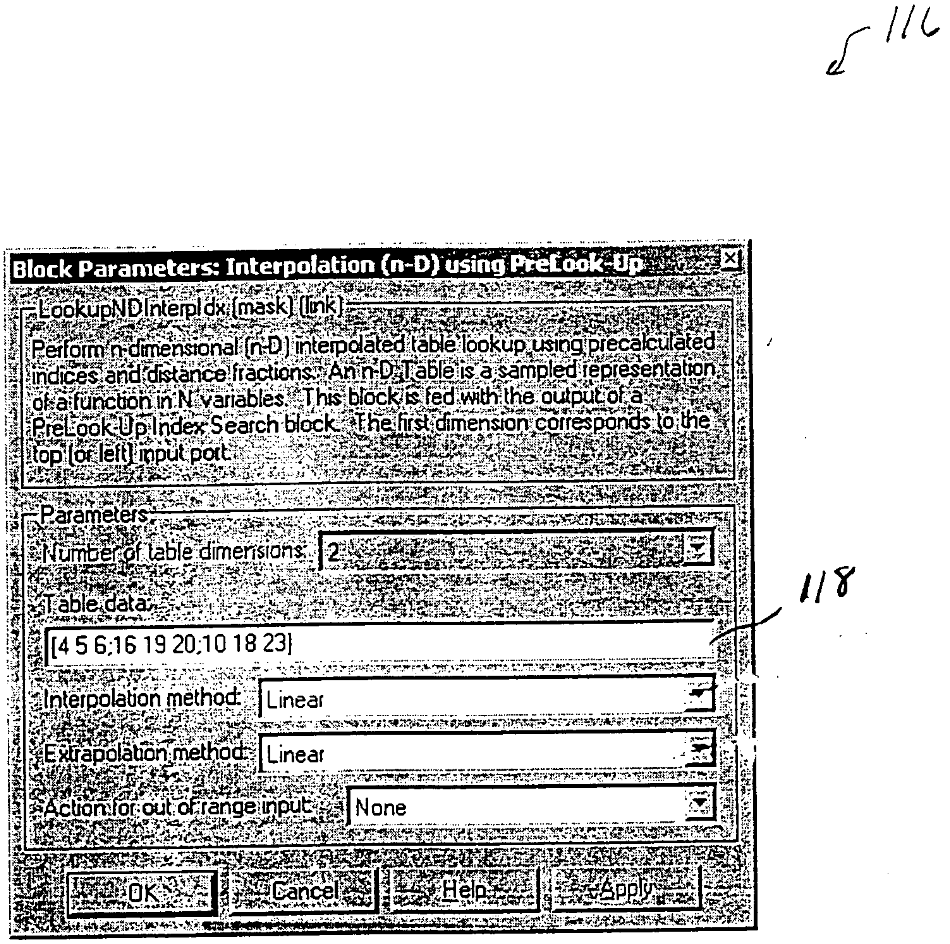
☐ Begin index search using previous index result

☐ Output only the index

Process out of range input: Linear Extrapolation

Action for out of range input: None

FIG. 7B



Block Parameters: Interpolation (n-D) using PreLook-Up

LookupNDInterpIdx (mask) (link)

Perform n-dimensional (n-D) interpolated table lookup using precalculated indices and distance fractions. An n-D Table is a sampled representation of a function in N variables. This block is fed with the output of a PreLook-Up Index Search block. The first dimension corresponds to the top (or left) input port.

Parameters

Number of table dimensions: 2

Table data:

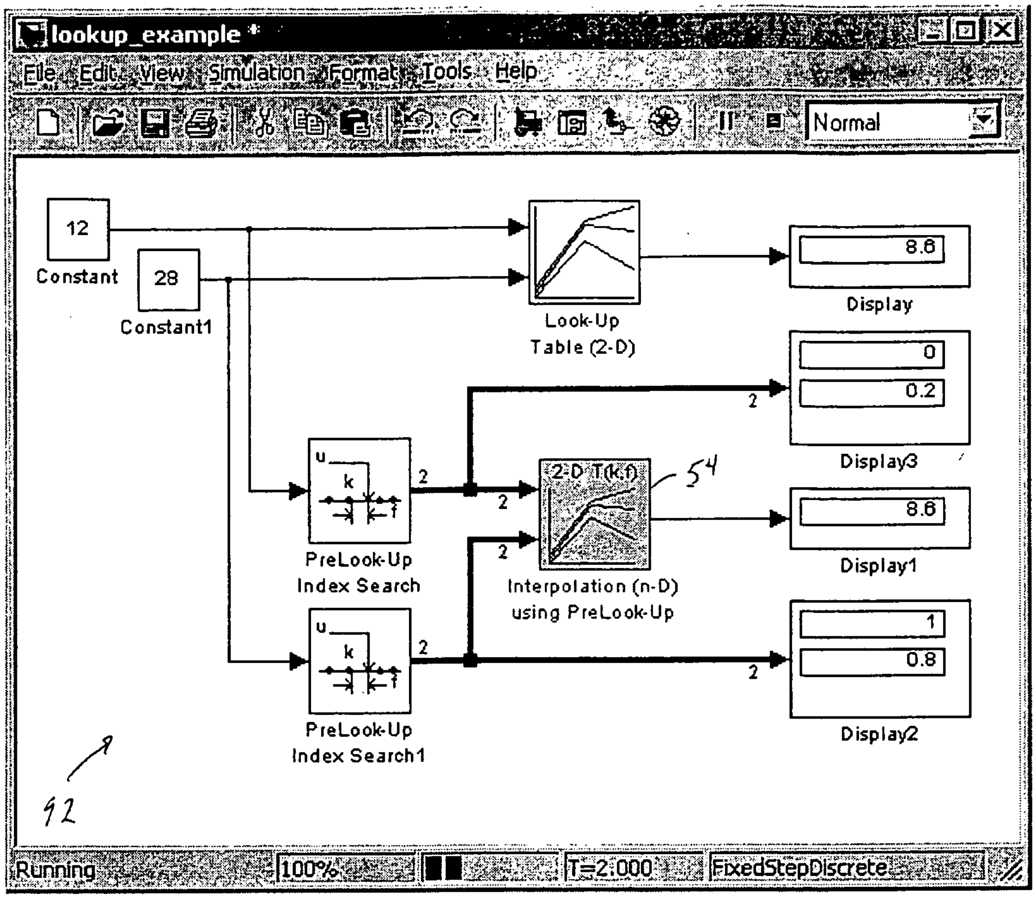
[4 5 6;16 19 20;10 18 23]

Interpolation method: Linear

Extrapolation method: Linear

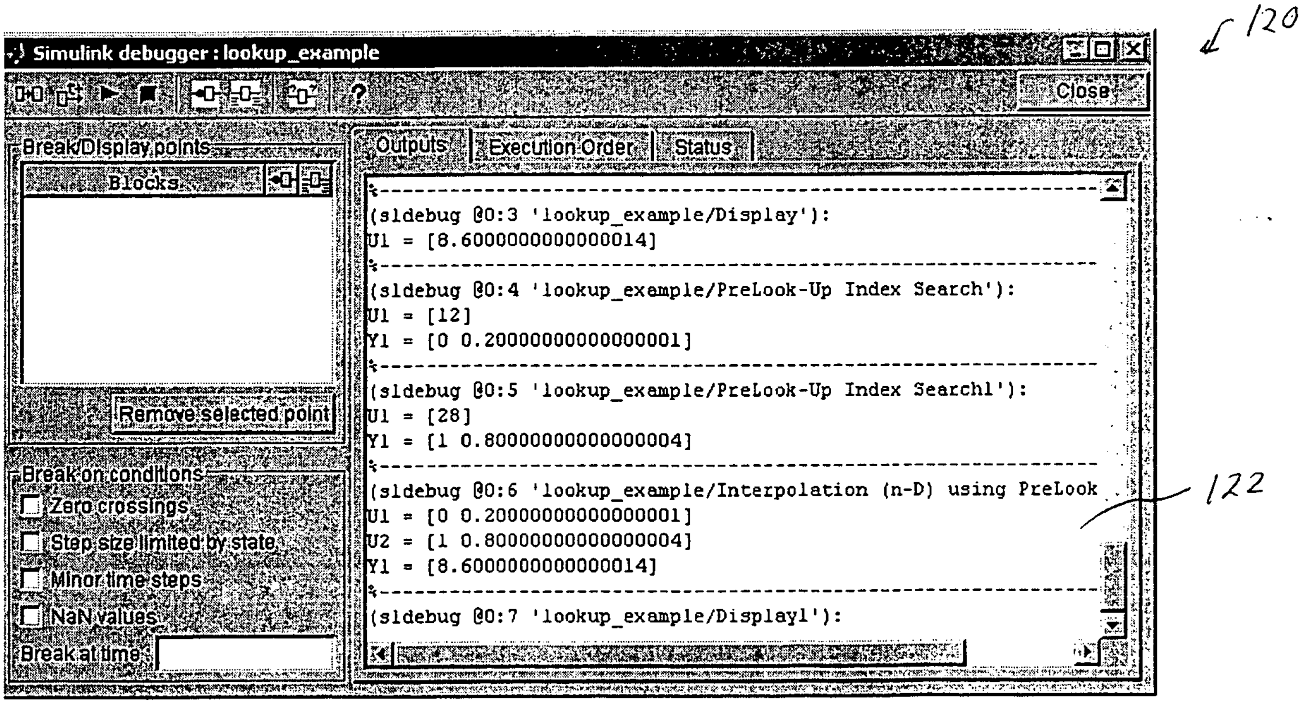
Action for out of range input: None

FIG. 8



90

FIG. 9



```
%----------------------------------------------------------------
(sldebug @0:3 'lookup_example/Display'):
U1 = [8.6000000000000014]
%----------------------------------------------------------------
(sldebug @0:4 'lookup_example/PreLook-Up Index Search'):
U1 = [12]
Y1 = [0 0.20000000000000001]
%----------------------------------------------------------------
(sldebug @0:5 'lookup_example/PreLook-Up Index Search1'):
U1 = [28]
Y1 = [1 0.80000000000000004]
%----------------------------------------------------------------
(sldebug @0:6 'lookup_example/Interpolation (n-D) using PreLook
U1 = [0 0.20000000000000001]
U2 = [1 0.80000000000000004]
Y1 = [8.6000000000000014]
%----------------------------------------------------------------
(sldebug @0:7 'lookup_example/Display1'):
```

FIG. 10

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